

**U.S. Department of the Interior Bureau of Land
Management**

**Toquop Wash and Tule Desert Watershed Restoration
Plan Preliminary Environmental Assessment**

DOI-BLM-NV-L030-2014-0017-EA

July 15, 2014

PREPARING OFFICE

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**Toquop Wash and Tule Desert
Environmental Assessment:
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Chapter 1. Introduction

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1.1. Identifying Information

1.1.1. Title, EA number, and type of project

Toquop Wash and Tule Desert Watershed Restoration Environmental Assessment, DOI-BLM-NV-L030-2014-0017-EA

1.1.2. Location of Proposed Action

The Toquop Wash and Tule Desert Watersheds, south-southeast of Caliente, Nevada (see Map 1.1, “Toquop Wash and Tule Desert Project Area” (p. 3)).

1.1.3. Name and Location of Preparing Office

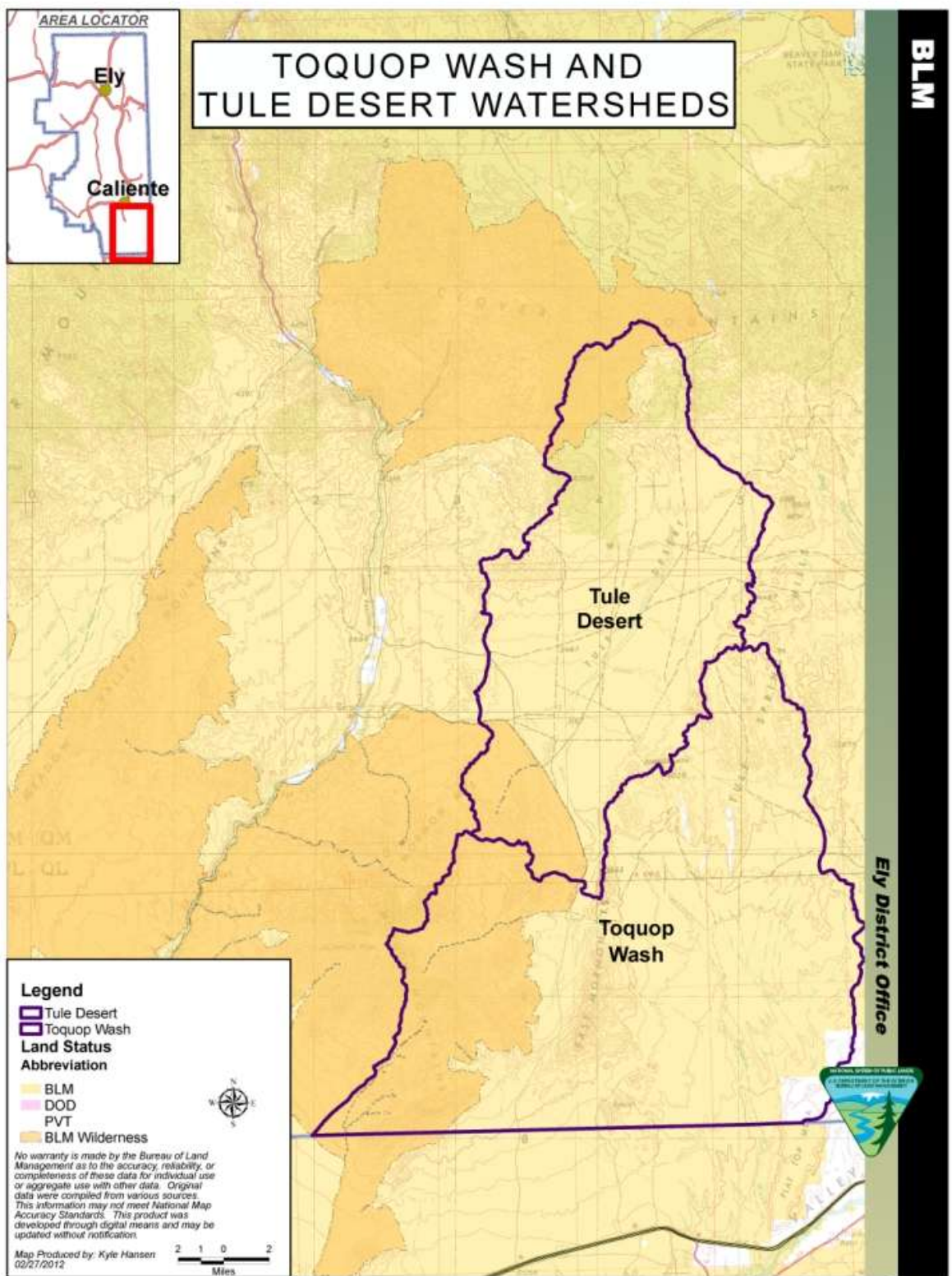
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1.2. Introduction

The project areas analyzed in this environmental assessment (EA) are the Toquop Wash and Tule Desert Watersheds, which lie south-southeast of the city of Caliente, Nevada (see Map 1.1, “Toquop Wash and Tule Desert Watersheds” (p. 3)). The Toquop Wash watershed is located in southern Lincoln County and Clark County, Nevada. The BLM Ely District portion of the watershed is 21 miles north to south and 20 miles east to west. The Mormon Mountain on the west and the Tule Springs Hills on the north form the basin, which drains to the south into the Virgin River near Mesquite, Nevada.

The Tule Desert watershed is located in southern Lincoln County, Nevada, in the southeast corner of the Ely District, Bureau of Land Management. The north end is 23 miles south of Caliente. The south end is 20 miles north of Mesquite, Nevada, and just five miles west of the Nevada/Utah State Line. The watershed stretches 24 miles from north to south and 11 miles east to west. Mountains, ridges and plateaus bounding the watershed basin are the Mormon Mountain Range on the southwest, Clover Mountains to the north and the Tule Springs Hills on the east. This watershed is bordered by the Toquop Wash watershed on the south, Meadow Valley Wash North and South Watersheds on the west, Beaver Dam Wash Watershed on the East, and the Clover Creek South Watershed on the north.

Map 1.1. Toquop Wash and Tule Desert Watersheds



The Toquop Wash and Tule Desert Watersheds are primarily dominated by vegetation from the Mojave Desert; there are, however, areas where Great Basin vegetation can be found as this is an area where the two ecoregions intermingle.

1.3. Background

Studies suggest that the Mojave Desert is threatened by the spread of non-native, invasive annual grasses which results in increased fire and loss of natural resources (Brooks 1999). While native grass species in the Mojave Desert generally remain standing for no more than one year, the non-native brome species originating from Eurasia typically persist for many years (Brooks 2008). Standing brome accumulates, providing fine, fire-prone fuels through the summer months (Brooks 1999). Fine fuels are classified as fast drying fuels that are less than 0.25 inches in diameter. Historically, the Mojave Desert has been characterized as not fire adapted and identified as a Fire Regime IV or V, condition class 1; however, due to the non-native annual grass invasion fire regimes are shifting to resemble a Fire Regime I, condition class 3 (see Appendix A for further description of Fire Regimes). Plant communities that compose the landscape in Tule and Toquop Watersheds lack the necessary adaptations to recover quickly following severe fire events. Whereas many ecosystems may rely or even thrive in response to fire cycles, this ecosystem is dominated by slow regeneration. Within the Mojave Desert wildfires are occurring at historically unprecedented frequencies and extents and have the potential to dramatically change the species composition in affected areas (Brooks and Matchett 2003).

1.4. Purpose and Need for Action

An interdisciplinary team consisting of Bureau of Land Management (BLM) specialists and other parties conducted an assessment of the condition of the watershed beginning in 2005 and culminating in 2011. The results of this assessment indicated there are areas of the landscape where vegetative communities were not attaining the desired span of conditions for each community as specified in the BLM Ely District Record of Decision and Approved Resource Management Plan (August 2008; RMP).

During the analysis of these watersheds, previous Emergency Stabilization and Rehabilitation (ES&R) vegetative treatments were inspected for treatment effectiveness. While progress towards the objectives was indicated, the progress is not as rapid as was desired. Recovery in vegetative communities in the Mojave Desert can take longer than in other ecosystems and it was decided that additional steps needed to be taken to help protect the remnants of the vegetative communities from events such as the catastrophic fires that occurred in 2005 and 2006.

The BLM proposes to create fuel breaks throughout the watershed in areas recently impacted by large wildfires and subsequent establishment of invasive annual grasses. The fuel breaks would be created by applying pre-emergent herbicide in strategic locations to reduce the density of

invasive annual grasses, and establish desirable perennial vegetation that would slow or prevent the spread of wildfire.

The purpose of the action is to: 1) create vegetation conditions that would reduce the spread of wildfire or provide anchor points for fire crews to engage in suppression action, 2) meet RMP objectives, 3) and to restore conditions that either resemble or mimic historic vegetation conditions.

The need for action is to respond to and address the large expanses of invasive annual grasses that have established within the burned areas of 2005 and 2006, and to reduce the fire return interval associated with this type of vegetation (Rogstad et al. 2009). Some areas have burned since the large fires, and there is a need to protect unburned habitat and reduce the size of future wildfires. Figure 1, below, illustrates the build-up of invasive annual grasses in the watersheds.

Figure 1. Photo of proposed fuel break treatment area adjacent to road



1.5. Relationship to Planning

The project is in conformance with the RMP. The RMP directs the Ely District to conduct Watershed Assessments in a prioritized fashion beginning with those watersheds deemed a high priority then progressing to those deemed a low priority. The Toquop Wash and Tule Desert watersheds were two of those identified as high priority watersheds. The proposals being considered in this EA would help in achieving the following resource management goals identified in the Ely RMP:

Vegetation Resources

Manage vegetation resources to achieve or maintain resistant and resilient ecological conditions while providing for sustainable multiple uses and options for the future across the landscape.

General Vegetation Management:

Manage vegetation resources to achieve or maintain resistant and resilient ecological conditions while providing for sustainable multiple use and options for the future across the landscape.

VEG-1: Emphasize treatment areas that have the best potential to maintain desired conditions or respond and return to the desired range of conditions and mosaic upon the landscape, using all available current or future tools and techniques.

VEG-4: Design management strategies to achieve plant composition within the desired range of conditions for vegetation communities, and emphasize plant and animal community health at the mid-scale (watershed level).

Watershed

Manage watersheds to achieve and maintain resource functions and conditions required for healthy lands and sustainable uses.

Fire

Return fire to its natural role in the ecological system and implement fuels treatments, where applicable, to aid in returning fire to the ecological system.

Management Actions

FM-4: Incorporate and utilize Fire Regime Condition Class as a major component in fire and fuels management activities. Use Fire Regime Condition Class ratings in conjunction with vegetation objectives (see the discussion on Vegetation Resources) and other resource objectives to determine appropriate response to wildland fires and to help determine where to utilize prescribed fire, wildland fire use, or other non-fire (e.g., mechanical) fuels treatments.

FM-5: In addition to fire, implement mechanical, biological, and chemical treatments along with other tools and techniques to achieve vegetation, fuels, and other resource objectives.

Fish and Wildlife

Provide habitat for wildlife (i.e. forage, water, cover, and space) and fisheries that is of sufficient quality and quantity to support productive and diverse wildlife and fish populations, in a manner consistent with the principles of multi-use management, and to sustain the ecological, economic, and social values necessary for all species.

General Wildlife Habitat Management: Provide habitat for wildlife (i.e. forage, water, cover, and space) and fisheries that is of sufficient quality and quantity to support productive and diverse wildlife and fish populations, in a manner consistent with the principles of multi-use management, and to sustain the ecological, economic, and social values necessary for all species.

WL-1: Emphasize management of priority habitats for priority species.

Special Status Species

Manage public lands to conserve, maintain, and restore special status species populations and their habitats; support the recovery of federally listed threatened and endangered species; and preclude the need to list additional species.

This EA is tiered to the analysis and effects disclosed in:

The Ely Proposed Resource Management Plan/Final Environmental Impact Statement (November 2007).

The Final Programmatic Environmental Impact Statement (PEIS) – Vegetation Treatments Using Herbicides on BLM Lands in 17 Western States (2007).

1.6. Relationship to Statutes, Regulations, or other Plans

The proposal is also consistent with other Federal, State and local plans or decisions including, but not limited to, the following:

The Lincoln County Public Lands Policy Plan (2010) which identifies the following policies:

- *Policy 2-1:* Support the concept of Multiple Use Management as an overriding philosophy for management of the public lands based on multiple use and sustainable yield concepts, and in a way that will conserve and enhance our natural resources.
- *Policy 2-2:* Manage and conserve the quality of the environment, economic, cultural, ecological, scenic, historical and archeological values. Manage and conserve wildlife habitat values compatible with economic opportunities needed to provide for long term benefits for the people of Lincoln County now, and for future generations.

- *Policy 2-3:* Support coordination of public land use policies and actions with all appropriate Federal, State, and local entities and the components of the City and County’s Comprehensive Master Plan.
- .
- *Policy 5-9:* Support burned area emergency stabilization, rehabilitation and restoration projects.
- *Policy 9-9:* Support prescribed burns in appropriate areas. Fire rehabilitation and appropriate re-vegetation of beneficial species, both native and non-native in relation to natural fire cycles; contribute to habitat improvement and rejuvenation.
- *Policy 9-11:* Noxious and invasive weed management should be supported to assist in maintaining healthy wildlife habitat. Coordination with BLM weed specialists and the Tri-County Weed District regarding noxious and invasive weed issues should be maintained.
- *Policy 11-4:* Air quality standards should be established based on best available control techniques by the Nevada Division of Environmental Protection. Lincoln County’s excellent air quality should be maintained as an important aspect of the quality of life of the citizens and visitors.
- *Policy 15-4:* There may be situations where livestock grazing may be effective in helping to reduce hazardous fuels (fire danger), in the form of invasive plant species (e.g. *Bromus tectorum*), without resulting in environmental damage. Therefore, encourage Federal agencies to use livestock to reduce such hazardous fuels during opportune times. Under such circumstances, active AUMs should not be negatively affected.
- *Policy 16-1:* Prevent the introduction and spread of noxious and invasive weeds. Control or eradicate existing populations using the most economical and effective control methods.
- *Policy 16-2:* Implement an integrated management system that addresses all applicable methods including but not limited to prevention, education, biological, cultural, mechanical and chemical methods.
- *Policy 16-3:* The Federal agencies should give a priority to working cooperatively with the Tri-County Weed Program to control noxious and invasive weeds. The continued spread of invasive weeds is a serious threat to agriculture and wildlife within the County. This threat requires immediate action by Federal, State and local agencies along with private land owners while there is still time to control the spread of these weeds.
- *Policy 16-7:* Support the development of cooperative weed management areas.
- State Protocol Agreement between the Bureau of Land Management, Nevada and the Nevada Historic Preservation Office for Implementing the National Historic Preservation Act (2009).

1.7. Scoping, Public Involvement and Issues

The “Toquop Wash and Tule Desert Watershed Restoration Project” was scoped internally by the Bureau of Land Management (BLM) Caliente Field Office interdisciplinary team on February 9, 2012. In addition, a letter to individuals and entities that had previously expressed interest in the watershed analysis process was mailed on April 20, 2012 providing a summary of the evaluation and determinations of the analysis of the watershed. In this letter, recipients were solicited for input regarding potential alternatives to affect change within the watershed to enhance the condition of the resources. A letter was sent to the Native American tribes that have expressed interest in this area on February 15, 2012.

The following issues are analyzed within this EA as a result of internal scoping and comments received from the public:

Vegetation

Non-Native Invasive and Noxious Species

Special Status Species

Fuels and Fire Management

Potential Impacts from Climate Change

Chapter 2. Proposed Action and Alternatives

2.1 Introduction

The previous chapter presented the Purpose and Need of the proposed project, as well as the relevant issues (i.e., those elements that could potentially have a significant impact to the quality of the human environment through the implementation of the proposed project). To meet the purpose and need of the proposed project in a way that resolves the issues, the BLM has developed a proposed action. The proposed action and a no action alternative are discussed below.

2.2. Adaptive Management

Adaptive management, as defined by the Natural Resource Council (NRC 2004) whose definition was adopted by the Department of Interior, is a decision making process that promotes flexible decision making that can be adjusted in the face of uncertainties as outcomes from management actions and other events become better understood. Careful monitoring of these outcomes both advances scientific understanding and helps adjust policies or operations as part of an iterative learning process. Adaptive management also recognizes the importance of natural variability in contributing to ecological resilience and productivity. It is not a ‘trial and error’ process, but rather emphasizes learning while doing. Adaptive management does not represent an end in itself, but rather a means to achieve more effective decisions and enhanced benefits. Its true measure is in how well it helps meet environmental, social, and economic goals, increases scientific knowledge, and reduces tensions among stakeholders.

Adaptive management allows the use of secondary treatments to achieve the objectives set forth for the treatment unit. Post monitoring of the primary treatment(s) would be conducted to determine the effectiveness of the treatment. Secondary treatments may be conducted within primary treatment areas to the extent that the objectives for desired vegetative conditions would be met.

Given the longer time scale of this project and the need to be flexible in how treatments are applied in given areas, adaptive management would be used for implementation of the Toquop Wash and Tule Desert Watershed Restoration Projects. Adaptive management would be used within the bounds of this analysis to achieve the objectives specified for vegetation conditions.

2.3. Proposed Action

2.3.1. Fuel Breaks

The Proposed Action is to utilize two herbicides to treat and reduce the amount of non-native, invasive annual grasses (e.g., *Bromus* spp.) and their seed bank to create fuel breaks on BLM administered land within the Tule and Toquop Watersheds.

The BLM proposes to use approved, commercially available pre-emergent and/or post-emergent herbicides in an effort to reduce invasive annual grasses (i.e., brome grass; red brome (*Bromus rubens*) or cheatgrass (*Bromus tectorum*)) by creating fuel breaks intended to interrupt the annual grass/fire cycle and release existing desirable native plant communities from the competitive pressure of undesirable non-native plant species. Imazapic would be used as a pre-emergent herbicide applied before emergence of invasive annual grasses. In early stages of plant growth (before seed production), Imazapic would be applied in combination with the post-emergent herbicide Glyphosate. Post-emergent application would be during the early stages of growth when the weeds are growing vigorously.

Additional approved surfactants/adjuvants would be added to these herbicides to aid with adherence and reduce drift. For example, methylated seed oil would be added to improve herbicide action and adherence to the soil or plant. A BLM approved drift inhibitor may be added to the herbicide mixture to produce a more uniform spray pattern of the solution in order to aid in penetration, improve deposition, and retard drift. Again, all label instructions and application rates would be strictly adhered to.

All herbicide treatment standard operating procedures listed in Appendix B of the *Final Vegetation Treatments Using Herbicides on BLM Lands in 17 Western States Programmatic Environmental Impact Statement for Applying Herbicides* (Appendix B), and all label instructions for herbicides and adjuvants would be strictly adhered to. Any spills or discoveries of hazardous or solid wastes would be reported immediately to the approving official.

The proposed action would be to create approximately 149 miles of fuel breaks 100 foot wide for a total of 1,807 acres within the Tule and Toquop Watersheds (Map 2.1). These fuel breaks would interrupt the annual grass/fire cycle by reducing the connectivity of the fuel bed. The fuel breaks would create a block effect within the watersheds, where if a wildfire did start its overall size would be reduced by containing it within one of these blocks. The majority of the fuel breaks (56%) would be adjacent to existing roads and trails along the predominant upwind side within previously burned areas. However, in areas where terrain limits placement on the upwind side or previously burned areas occur on the downwind side of the existing road or trail, then the fuel break may be moved to the downwind side if it would make the fuel break more efficient. Approximately 20 percent of the fuel breaks would occur along the previously burned area parameter where no existing roads or trails occur and approximately 17 percent would occur along existing roads and trail outside of previously burned areas. Along existing roads and trails that are flanked by the Mormon Mountains Wilderness, the fuel breaks would be created on both sides of the existing road and trail. This accounts for approximately 7 percent of the proposed fuel breaks. In these areas the fuel break would remain outside of the wilderness and still only be a total of 100 feet wide of treated area, 50 feet on both sides of the existing road or trail.

Application would occur aurally with aircraft that is specially equipped for herbicide application and operated by a pilot who is qualified for herbicide application. However, ground application

with backpack sprayers or vehicles with spray equipment could be utilized in small areas where it was more efficient or there is only a small area of grass needing treatment.

Treatments would occur during the fall/winter season avoiding wildlife sensitive seasonal times, such as migratory bird nesting and more active desert tortoise (*Gopherus agassizii*) seasons. These herbicides are for terrestrial use only and would not be applied directly to water or to areas where surface water is present or in washes. No application would occur during windy or gusty conditions or if it is raining or forecasted to rain within 48 hours of application. Label specifications and Appendix B SOPs (Appendix B) would guide aerial, backpack sprayer, herbicide, adjuvant and drift inhibitor usage along with Personal Protective Equipment (PPE), application rate, coverage, mixing methods, droplet size to reduce runoff and drift, and herbicide storage and disposal.

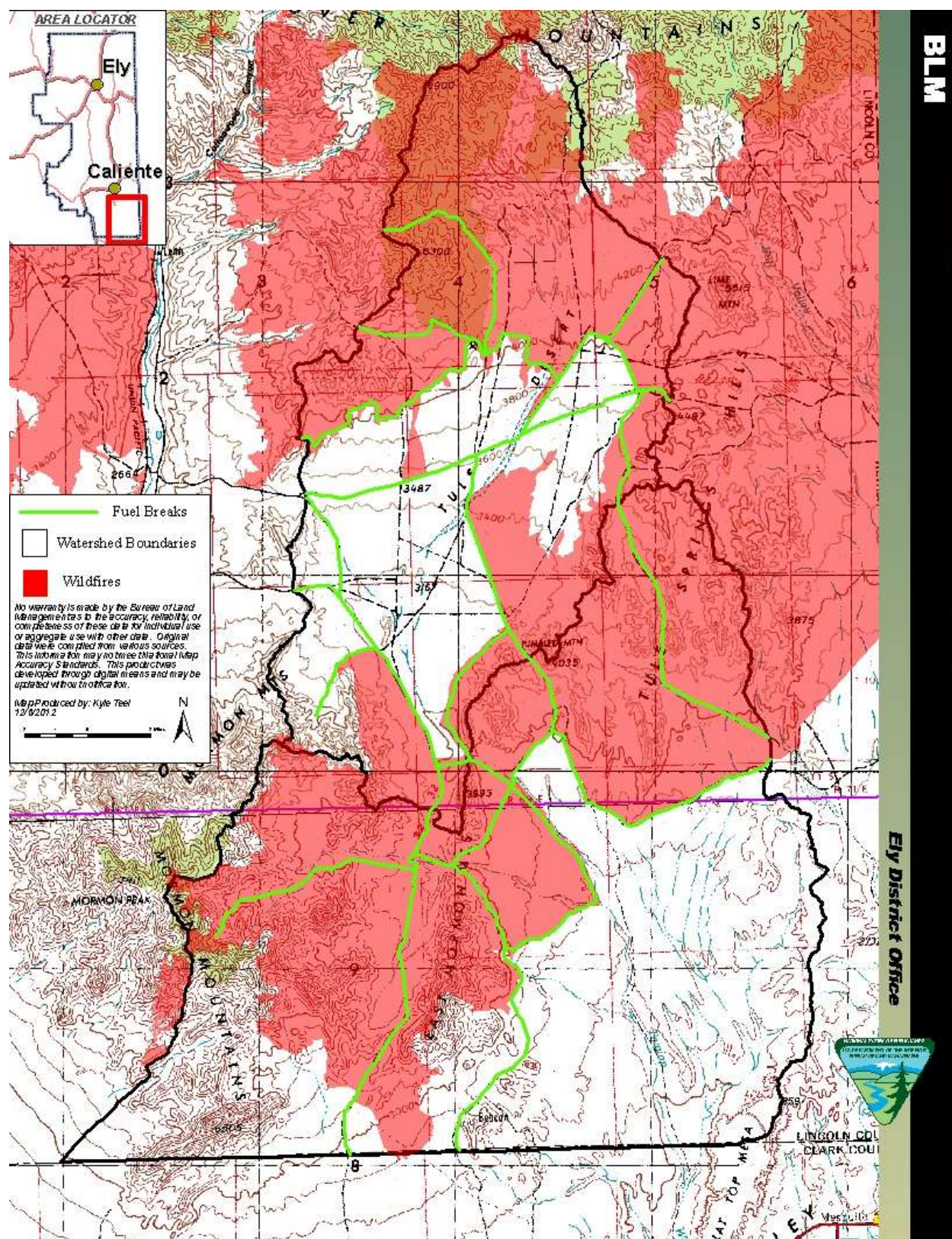
Seeding of appropriate species could occur at appropriate length of time after herbicide treatments to aid in the recovery of desirable and less flammable vegetation composition within the fuel breaks. Seed application would be applied through aerial or ground methods. Aerial methods would involve a helicopter or airplane flying over the treatment area spreading the seed. Ground methods could involve use of an all-terrain-vehicle (ATV) seeder in limited areas. ATV seeding would involve a seeder on the back of the ATV spreading the seed.

In addition to seeding, outplanting of shrubs may enhance restoration efforts. Outplantings would be strategically placed to create fertile islands which may serve as seed sources for larger areas. Additional applied science techniques may be employed in the watersheds to investigate restoration of burned areas and potential effects of small mammals on restoration efforts. Manipulations to rodent habitat, such as vertical mulching, decoy seed application, and addition of sawdust or other organic material may be employed in discrete areas. Fencing of these restoration sites may be needed.

Prior to treatments or any ground-disturbing activities, the areas would be surveyed to identify cultural or desert tortoise resources to avoid during application. All resources potentially eligible to the National Register of Historic Places and desert tortoises or burrows would be avoided by herbicide application and any other treatments. All design features listed in the Risk Assessment for Noxious and Invasive Weeds (Appendix C) will be adhered to.

The fuel breaks would be maintained in future years to ensure they continue to function properly and reduce the continuity of exotic annual grasses. Maintenance of the fuel breaks would be accomplished using techniques very similar to those described in this EA or in the same manner as they were originally implemented. During years of low precipitation, maintenance of the fuel breaks may not be needed.

Map 2.1 Proposed Treatments for Toquop Wash and Tule Desert Watersheds



2.3.2. Wildland Fire for Resource Benefit and the Fire Management Plan

Currently the Fire Management Plan (FMP; BLM 2004) allows for wildland fire for resource benefit on approximately 19,425 acres within a portion of the Clover/Delamar/S. Pahroc/Irish Fire Management Unit (FMU) which overlaps with the Toquop Wash and Tule Desert Watershed (See Map 2.2). This area was burned during the Duzak fire in 2005. As a result, the area would no longer be managed as an area where wildland fire would be used for resource benefit. The FMP would be amended to remove this area from consideration of managing wildfire for resource benefit.

2.4. No Action Alternative

Under the No Action Alternative, fuel breaks would not be created within the watersheds. The FMP would not be amended. Vegetation would be managed reactively by suppressing wildfires and responding to any damages by implementing ES&R treatments.

2.5. Alternatives Considered but not Analyzed in Detail

The following alternatives were considered instead of chemical methods to create the fuel breaks but were not analyzed in detail.

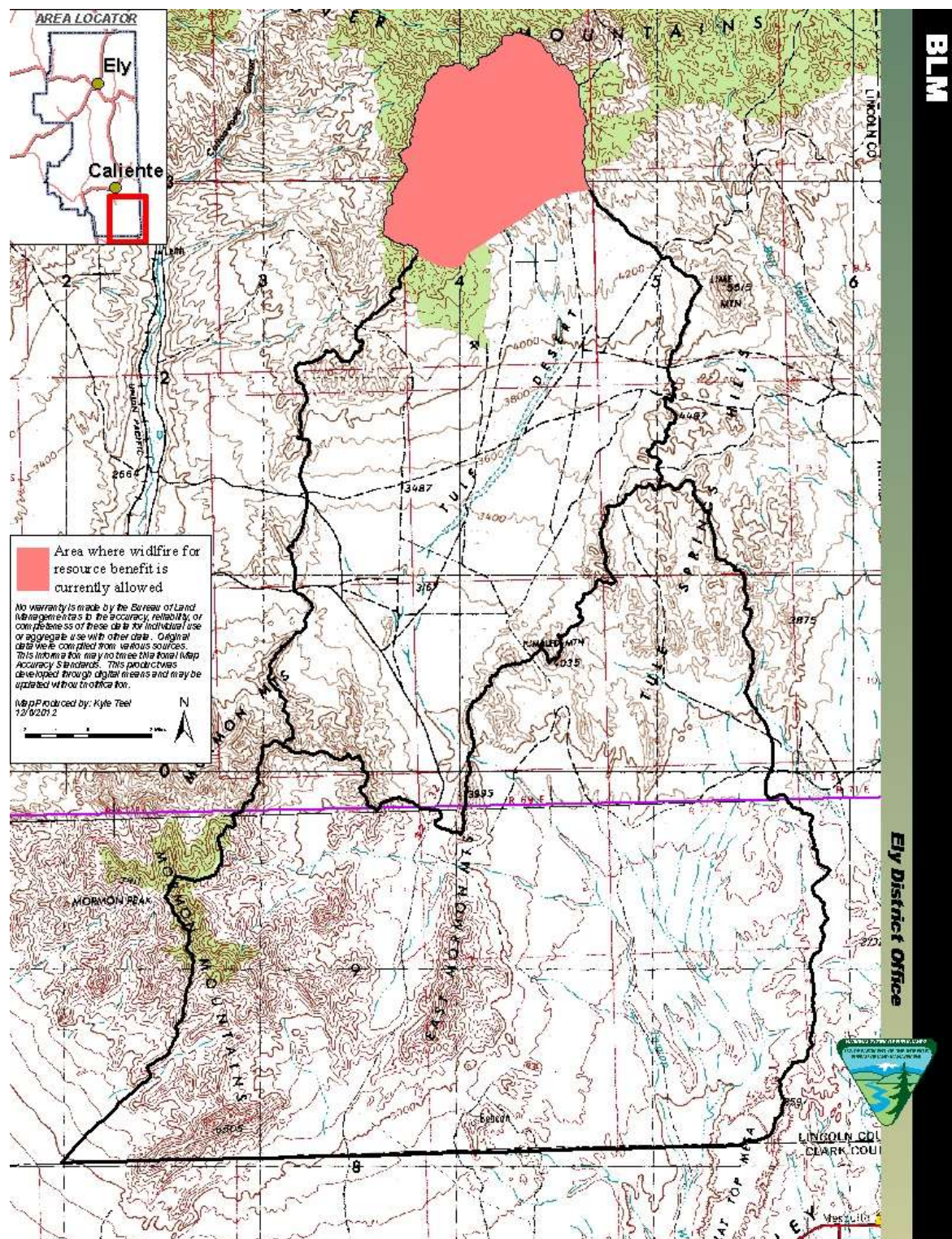
2.5.1. Mechanical Mowing/Disking

An alternative was considered to remove hazardous fuels and create fuel breaks through mowing or disking by using equipment such as: Dixie harrow, rotary mower, or other mastication equipment. This alternative method was not analyzed further because this type of equipment would not be able to remove enough of the annual grass due to rough terrain, washes, and the varying size of invasive annual grasses (i.e. in low production years the annual grasses could be shorter than the mower could accommodate).

2.5.2. Mechanical Blading

An alternative treatment was considered to remove hazardous fuels and create fuel breaks through mechanical blading by using equipment such as: bulldozer, bobcat or grader. This alternative method was not analyzed further because this type of equipment would cause continual ground disturbance and could promote the growth of the annual brome by spreading seed due to the ground disturbance.

Map 2.2 Area where fire for resource benefit is currently allowed within the Tule and Toquop Watersheds.



2.5.3. Graze Domestic Livestock

An alternative to reduce invasive annual grasses and create the fuel breaks through the use of domestic livestock was considered. In order for this type of method to work, a large amount of livestock would need to be concentrated in strips along the roads or desired areas. These animals would be intensively managed through water hauling, herding and temporary fencing to ensure that they remained in the fuel break locations. Timing restrictions would apply when using targeted grazing to reduce impacts to desired plant species and desert tortoise. Targeted grazing would only be allowed during early spring green up when the targeted annual grasses have emerged and other desired (perennial) grasses are mostly dormant, or in the fall after desired grasses and forbs become dormant. This alternative method was not analyzed further because this method would be disruptive to the current livestock operations in the area and the amount of livestock needed for this treatment may be infeasible.

Chapter 3. Affected Environment

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3.1. Introduction

The Inter-Disciplinary (ID) team evaluated potential impacts to the following resources/concerns in accordance with criteria listed in the H-1790-1 NEPA Handbook (2008), to determine if detailed analysis was required. Consideration of some of these items is to ensure compliance with laws, statutes, or Executive Orders that impose certain requirements upon all Federal actions. Other items are relevant to the management of public lands in general, and to the Ely District BLM in particular. The items listed in Table 3.1, “Resources that have been reviewed and dismissed” have been reviewed and determined to be unaffected by the Proposed Action and No Action Alternative.

Table 3.1. Resources that have been reviewed and dismissed.

Resource/Concern	Rationale for dismissal or detailed analysis
Soil Resources	Implementation of the proposed action would not impact soil resources.
Recreation	Implementation of the proposed action would not impact recreation.
Visual Resource Management	Implementation of the proposed action would not impact visual resources.
Riparian Areas and Wetlands	Implementation of the proposed action would not impact riparian areas or wetlands.
Wild Horses	There are no wild horse Herd Management Areas in the Toquop Wash and Tule Desert Watersheds.
Livestock Grazing	Implementation of the proposed action would not impact livestock grazing within the Tule and Toquop Watersheds.
Water Resources (Water Rights)	Herbicide would not be applied directly to water or to areas where surface water is present or in washes to prevent potential impacts to water resources. No water rights would be affected. No adverse effects to water resources or water rights are expected as all treatments would be conducted in upland sites.
Water Quality, Drinking/Ground	Herbicide would not be applied directly to water or to areas where surface water is present or in washes to prevent potential impacts to water resources. The application of potential treatments upon the landscape would not affect the water quality in the watershed as any surface water would be avoided, and design features would be implemented to protect ground water.
Cultural Resources	Cultural resources would be avoided or mitigated prior to ground disturbing activities. Compliance with the National Historic Preservation Act will be in accordance with the “Programmatic Agreement between the Caliente Field Office of the Bureau of Land Management and the Nevada State Historic Preservation Officer Regarding National Historic Preservation Act Compliance for Watershed Assessments in the Caliente Field Office.” See Appendix E for the Programmatic Agreement.
Native American Religious and other Concerns	There are no Native American traditional religious sites or cultural sites of importance within the proposed project area that would be affected as a result

	of this project. There are no 'Indian Trust Assets' identified within the Ely District Area.
Environmental Justice	There are no known disadvantaged populations that would be adversely impacted by the project.
Wastes, Hazardous or Solid	No known hazardous or solid wastes exist within the Toquop Wash and Tule Desert Watersheds. Any spills or discoveries of hazardous or solid wastes would be reported immediately to the approving official. Any such situations would be addressed swiftly and by following appropriate rules, regulations and protocols.
Wild and Scenic Rivers	There are no wild and scenic rivers in the Toquop Wash and Tule Desert Watersheds.
Floodplains	No floodplains have been identified for the analysis area.
Prime and Unique Farmlands	There are no Prime and/or Unique Farmlands within the watersheds.
Forest and Woodland Vegetation	The proposed treatments would not take place in forested lands thus no impacts would occur to this resource.

3.2. Air Quality

The federal Clean Air Act requires the United States Environmental Protection Agency to establish standards for pollutants considered a danger to public health. Seven criteria are monitored and assessed against the national air quality standards. Air quality in Lincoln County exceeds standards for lead and are considered unclassifiable/attainment for carbon monoxide, particulate matter less than or equal to both 2.5 and 10 micrometers, nitrogen dioxide, ozone, and sulfur dioxide.

3.3. Vegetation

Pinyon-juniper and mixed mountain shrubs should occur in the high elevations of the Clover and Mormon Mountains. Montane shrubs including turbinella oak (*Quercus turbinella*), Mohave ceonothus (*Ceanothus greggii* var *vestitus*), desert bitterbrush (*Purshia glandulosa*), manzanita (*Arctophylos patula*), and mountain big sagebrush (*Artemisia tridentata* ssp. *vaseyana*) occupy the mid to high-elevation slopes. Downslope from the Clover and Mormon Mountains, toward the mid-section of the watersheds, blackbrush (*Coleogyne ramosissima*) vegetation communities should occupy the landscape. White bursage (*Ambrosia dumosa*), creosotebush (*Larrea tridentata*), big galleta grass (*Hilaria rigida*) and Joshua tree (*Yucca brevifolia*), should occupy the lower elevations of the watersheds. However, these vegetation communities, particularly the creosote- white bursage community, have been altered due to the recent wildfires and have been replaced with the exotic annual grasses.

3.4 Watershed Condition

One of the tools used to make the assessment of the watershed's condition is Fire Regime Condition Class or FRCC, which is an interagency standardized tool based on scientific and peer reviewed literature for determining the degree of departure from a reference vegetation

condition within a given biophysical setting (BPS). More information regarding this tool can be found at the following website <http://www.frcc.gov>. Assessing FRCC can help guide management objectives and set priorities for treatments. The classification is based on a relative measure describing the degree of departure from the historic natural disturbance regime for a given BPS. This departure is described as changes to one or more of the following ecological components: vegetation characteristics (species composition, structural stages, stand age, canopy closure and mosaic pattern); fuel composition; fire frequency, severity and pattern; and other associated disturbances (e.g. insects and disease mortality, grazing and drought). There are three FRCC classes used to describe the departure from reference BPS conditions. The three classes are based on low (0-33% departure; FRCC1), moderate (34-66% departure; FRCC2) and high (67-100% departure; FRCC3) departure from central tendency of the natural (historical) regime. Low departure is considered to be within the natural (historical) range of variability, while moderate and high departures are outside the range of variability. The FRCC rating is accompanied by indicators of the potential risks that may result. Biophysical setting models have been developed for most major vegetation types.

Fire Regime Condition Class (FRCC) was assessed on the Tule and Toquop Watersheds using data from the LANDFIRE website (www.Landfire.Gov). Map 3.1, “Tule and Toquop Watershed FRCC” illustrates the high departure from natural conditions across the watersheds. The watersheds are primarily FRCC 3 (highly departed) resulting from a combination of drought, historic livestock grazing, and the 2005 and 2006 wildfires which resulted in a uncharacteristic vegetation classification of exotic vegetation (red brome). The risk of losing key ecosystem components within the watersheds is considered high. Vegetation attributes have been altered from their historical range and now include uncharacteristically high densities of exotic annual grasses. The current watersheds FRCC ratings are 1% FRCC 1, 8% FRCC 2 and 91% FRCC 3 for an overall watershed FRCC 3 rating (81% departure).

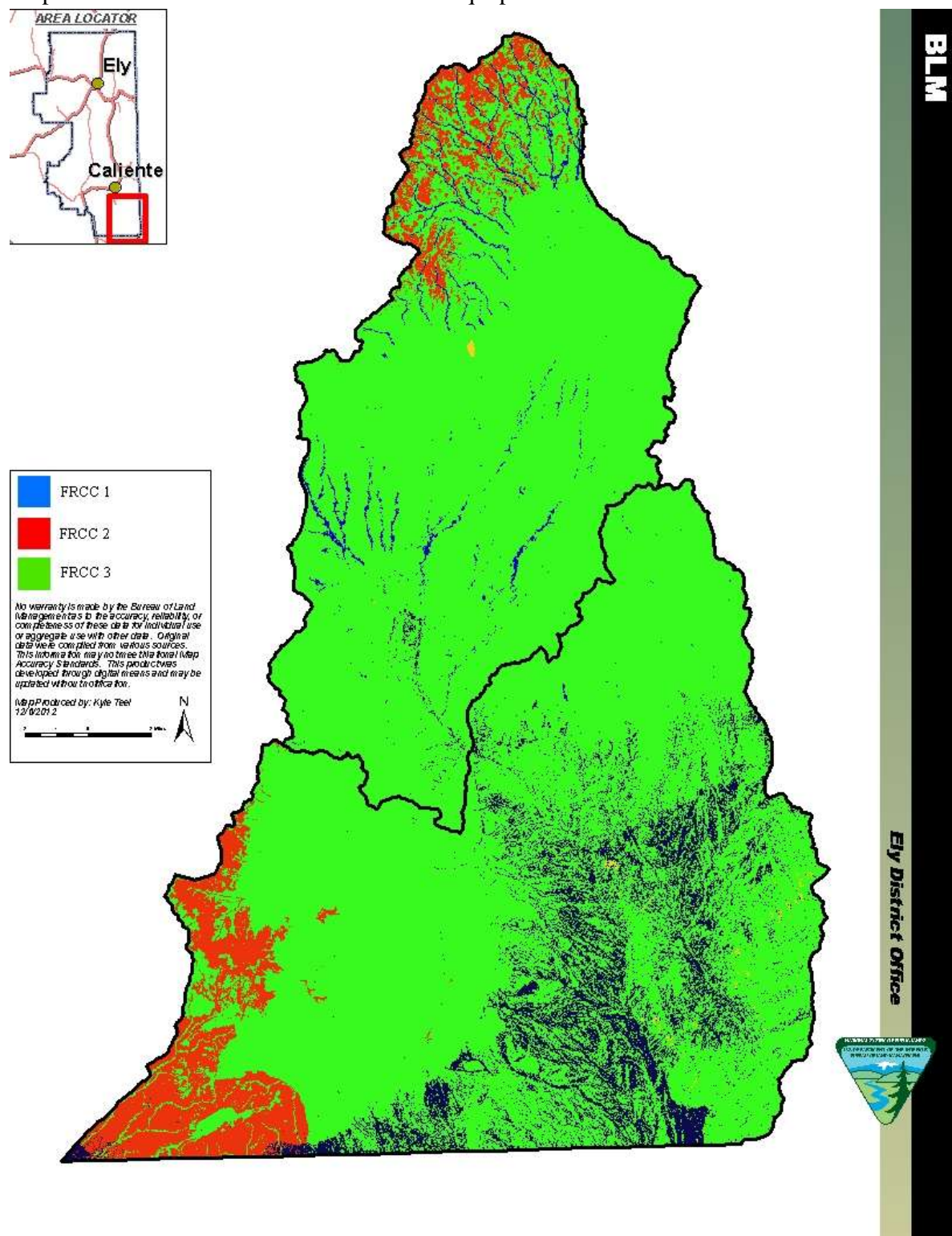
3.5. Non-native Invasive and Noxious Species

Noxious weed mapping was completed within the project area in 2011. Locations of salt cedar (*Tamarix ramosissima*), scotch thistle (*Onopordum acanthium*) and tall whitetop (*Lepidium latifolium*) are shown in the weed risk assessment in Appendix C. Invasive annual grasses (red brome and cheatgrass), and annual forb red stem stork’s bill (*Erodium cicutarium*), are ubiquitous, and exhibit high cover over most of the Tule watershed.

Information from the Ely District Weeds Inventory Database 2011 shows infestations of Tamarisk (*Tamarix* sp.) throughout the Toquop Wash watershed. Sahara or Asian mustard (*Brassica tournefortii*) was documented at vegetation assessment plots in the 2009 vegetative community assessment. It is highly invasive and moving north from a large population in Mesquite, Nevada and U.S. Interstate Highway 15. The invasive annual grass, red brome, and the annual forb, red stem stork’s bill, are ubiquitous and exhibit high cover over most of the watershed.

Cheatgrass (*Bromus tectorum*) may also be found in the watersheds. The following invasive species are known to occur within the watershed: bull thistle (*Cirsium vulgare*), hoary cress (*Cardariadraba*), musk thistle (*Carduus nutans*), and scotch thistle. Other species that may occur are halogeton (*Halogeton glomeratus*), Russian thistle (*Salsola kali*), tumble mustard (*Sisymbrium altissimum*) and bur buttercup (*Ranunculus testiculatus*) scattered along roads in the area.

Map 3.1 FRCC within the Tule Desert and Toquop Wash Watersheds.



3.6 Special Status Plants

According to the Nevada Natural Heritage Program website, Las Vegas buckwheat (*Eriogonum corymbosum*) is the only special status plant species occurring within these watersheds. This plant can be found on and near gypsum soils, often forming low mounds or outcrops in washes and drainages, or in areas of generally low relief, often with other gypsum-tolerant species. This is a small shrub growing approximately five feet in height. It flowers in the late summer to early fall with bright to pale yellow flowers. This plant is susceptible to impacts from off-road vehicle use, trash dumping, gypsum mining and road and utility corridors. This plant occurs on both the BLM and the State of Nevada Sensitive Species List. Although habitat for this species occurs within the watersheds, no habitat for this species occurs within the proposed fuel breaks.

3.7. Fish and Wildlife Resources

3.7.1. Fish and Wildlife

Big game species that occur in the Toquop Wash and Tule Desert Watersheds could include Rocky Mountain elk (*Cervus canadensis*), mule deer (*Odocoileus hemionus*), and desert bighorn sheep (*Ovis canadensis nelsoni*; a BLM sensitive species). Elk may be found in the northern portion of the watershed within the Clover Mountains. Mule deer are generally found in the more mountainous terrain of the Clover and Mormon Mountains. Desert bighorn sheep are generally found in the Mormon and East Mormon Mountains.

The planning area also provides habitat for an array of other wildlife species such as coyotes (*Canis latrans*), rabbits (*Lepus* and *Sylvilagus* spp.), badgers (*Taxidea taxus*), bobcats (*Lynx rufus*), grey and kit foxes (*Urocyon cinereoargenteus* and *Vulpes macrotis*), ring-tailed cats (*Bassariscus astutus*), and numerous other small mammals, reptiles, amphibians, and invertebrates.

3.7.2. Migratory Birds and Raptors

Migratory birds are those listed in 50 CFR 10.13 and include many native species commonly found in the U.S. Migratory birds are protected under the Migratory Bird Treaty Act (MBTA). Migratory bird nesting and foraging habitats are located throughout the Toquop Wash and Tule Desert Watersheds, with certain species adapted to specific habitat types. Great Basin Bird Observatory sampled numerous atlas blocks across Nevada for inclusion within the Atlas of the Breeding Birds of Nevada (Floyd et al. 2007). Appendix D lists the breeding birds documented in the watersheds from the surveyed atlas blocks.

The Toquop Wash and Tule Desert Watersheds support a diverse suite of raptor species including the golden eagle. Specific habitat needs vary by species and season, but all raptors have the common requirement of an adequate prey base of small mammals, birds, fish, reptiles,

and/or insects.

3.7.3 Special Status Animal Species

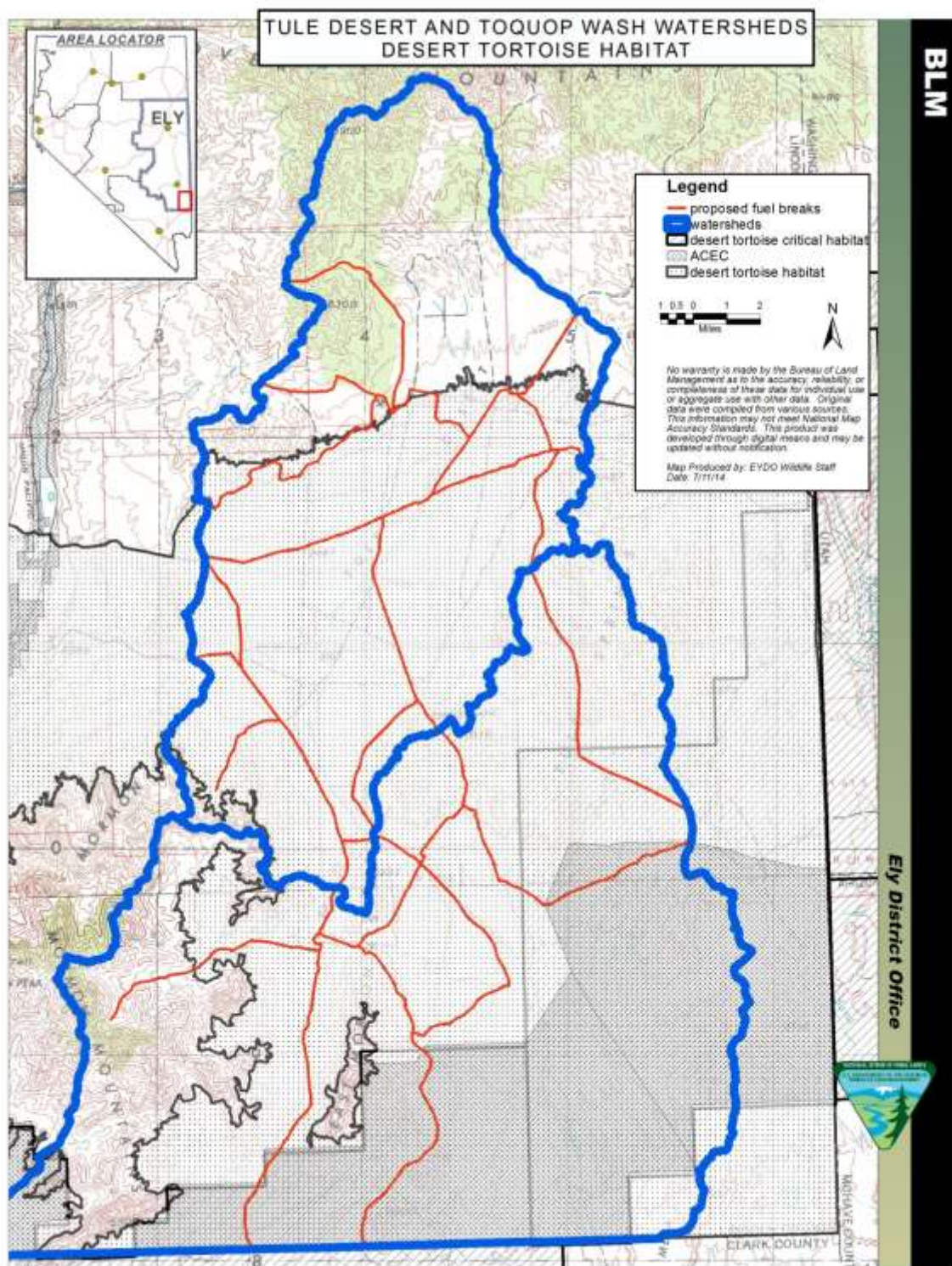
A complete list of Sensitive Species which could occur within the watersheds can be found in Appendix D.

3.7.4. Federally Endangered and Threatened Species

The desert tortoise (*Gopherus agassizii*) occurs in the Mojave Desert portions of the Toquop Wash and Tule Desert Watersheds. This accounts for approximately 75 percent of the watersheds or 233,367 acres. Approximately 27 percent of the desert tortoise habitat within the watersheds has been designated as critical habitat and occurs within Mormon Mesa critical habitat unit (31,971 acres) and 51,314 acres in the Beaver Dam Slope critical habitat unit. The Ely District also established two Areas of Critical Environmental Concern (Mormon Mesa 47,950 acres and Beaver Dam Slope 22,760 acres) which overlap 23 percent of the watersheds (See Map 3.2).

Desert tortoise density estimates for these watersheds vary depending on the area and habitat quality. The 2012 desert tortoise density estimate for Mormon Mesa Critical Habitat Unit is 4.3 per km². The 2012 desert tortoise density estimate for Beaver Dam Slope Critical Habitat Unit is 5.4 per km². The remaining desert tortoise habitat density estimate is 3.4 per km² for the Northeast Mojave Recovery Unit (USFWS 2012a). However, because the project area encompasses burned areas, areas invaded by non-native annuals, and areas adjacent to roadways, the project area likely contains depleted or reduced densities of desert tortoises.

Map 3.2 Tortoise habitat within the Tule Desert and Toquop Wash Watersheds.

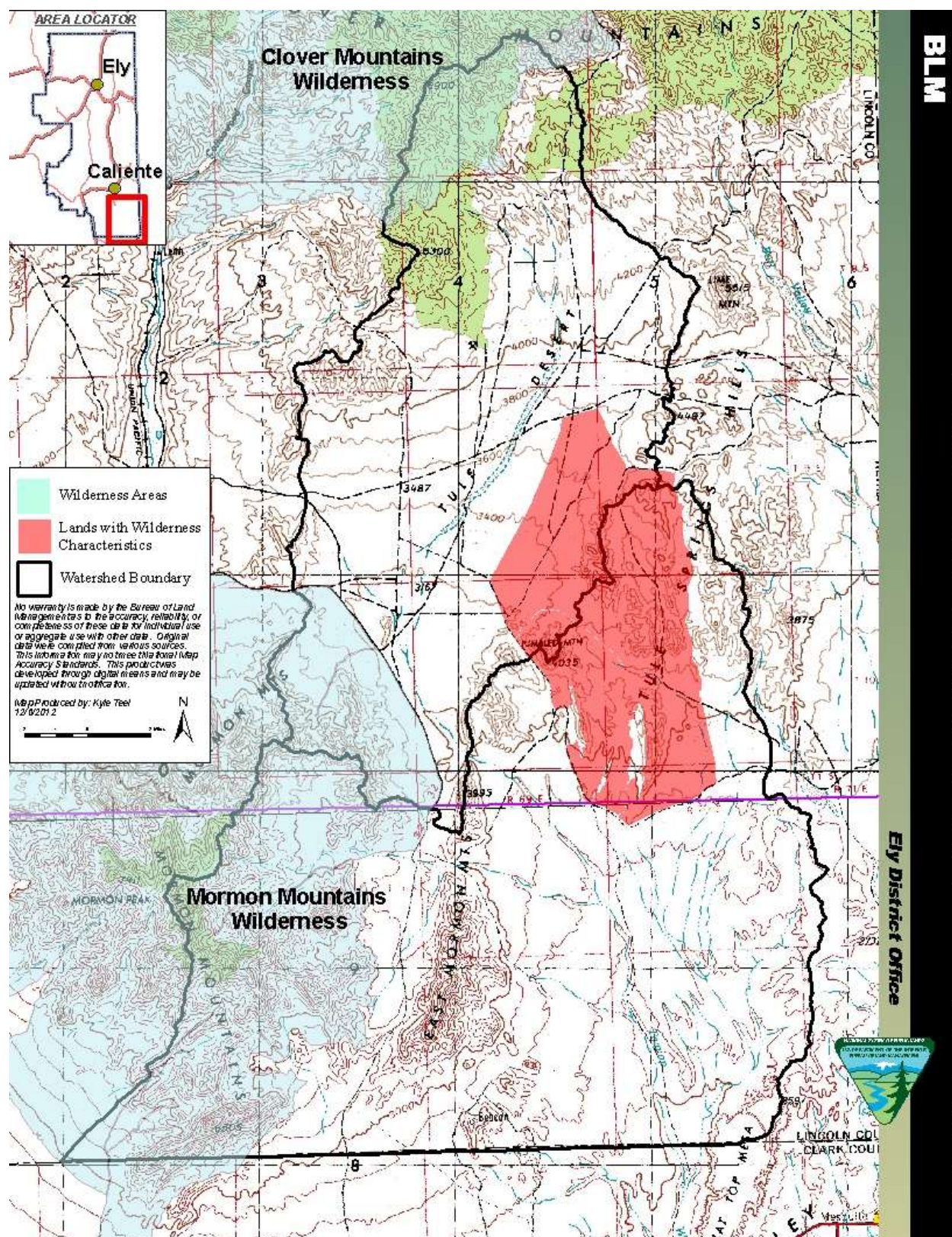


3.8. Wilderness and Lands with Wilderness Characteristics

Portions of two wilderness areas (Clover Mountains Wilderness and Mormon Mountains Wilderness) overlap with the north and western portions of the watersheds (Map 3.2). The Clover Mountains Wilderness is 85,784 acres in size, and approximately 8,229 acres, or 9.5% of the wilderness, lies within the Tule Desert watershed. The Mormon Mountains Wilderness covers 157,938 acres, and 55,810 acres, or 35% of the wilderness, lie along the south western edge of both watersheds.

There is one Land with Wilderness Characteristics (LWC) unit that covers 35,500 acres, within the two watersheds (See Map 3.2). This unit possesses the criteria of size, naturalness, and solitude, but was found to be lacking in outstanding opportunities for primitive and unconfined recreation. There has not been a land use plan amendment to determine if or how this unit of LWC would be preserved for its wilderness characteristics.

Map 3.3 Wilderness areas within the Tule Desert and Toquop Wash Watersheds



3.9. Fuels and Fire Management

3.9.1. Fuels

Fuel types within the Toquop Wash and Tule Desert Watershed represent a broad range of vegetation from pinyon and juniper woodlands to creosote bush communities. The majority of the watersheds within the Mojave Desert are not considered to be fire adapted and had a historic fire regime of very low fire frequency. However, the large fires in 2005 and 2006, and other historic fires have converted areas within the watersheds to red brome and cheatgrass dominated sites. The red brome and cheatgrass dominated sites have altered the historic fire regime intervals to a one of high fire return frequency.

Vegetation treatments previously conducted within the watersheds has total approximately 29,823 acres of which about 29,575 were aerially seeded, 238 were hand seeded, and about 10 acres were planted with seedlings. This work was part of the efforts to stabilize the area following the large fires that burned in 2005 and 2006.

3.9.2. Fire Management

Fire occurrence within the watersheds since 1980 has resulted in approximately 404,107 acres being burned. The fire size varied from one to over 300,000 acres. The fires that occurred in 2005 and 2006 decimated a large portion of both watersheds and account for most of the burned acreage.

Current fire management is guided by the Ely District FMP; USDI–BLM 2004). The FMP is divided into 25 different Fire Management Units (FMUs). Each of these FMUs is assigned a classification or type that defines the primary resource management objective, fire protection values and fire size constraints. Toquop Wash and Tule Desert Watersheds occur within four FMUs: Clover/Delamar/S. Pahroc/Irish, Elgin/Blue Nose/Kane Spring PJ, Mojave, and Mojave and Highlands Special Management Areas.

Treatment acres are listed in the FMP and are included below in Table 3.4, “Wildland Fire for Resource Benefit by FMU and the acreage of each FMU within the Toquop Wash and Tule Desert Watersheds.” Wildland fire for Resource Benefit and prescribed fire are approved within all FMUs within the project area.

Table 3.4. Wildland Fire for Resource Benefit by FMU and the acreage of each FMU within the Toquop Wash and Tule Desert Watersheds.

Fire Management Unit Name	Percent Of FMU*	Acres of Wildland for Resource Benefit	Wildland Fire for Resource Benefit Burn Targets		
			Individual Wildland Fire For Resource Benefit	Decadal Acres	
				Total Acres	Watersheds Proportional Acres
Clover/Delamar/S. Pahroc/Irish	6	19,425	50,000	100,000	6,000
Elgin/Blue Nose/Kane Spring PJ	4	0	0	0	0
Mojave	89	0	0	0	0
Mojave and Highlands SMA	1	0	0	0	0

*Represents the percent of the FMU that occurs within Toquop Wash and Tule Desert Watersheds and is used to calculate the proportional acres listed in the table.

3.10. Human Health and Safety

BLM approved herbicides were evaluated in the 2007 Final Vegetation Treatments Using Herbicides on BLM Lands in 17 Western States PEIS and ROD (USDI BLM 2007a). The evaluation included effects to human health and safety. Two herbicides analyzed and proposed for use in the Proposed Action are Imazapic and Glyphosate. All SOPs listed in Appendix B of the above listed document would be followed.

The Final Vegetation Treatments using Herbicides on BLM lands in 17 Western States PEIS and ROD (2007) identified two possible receptors to exposure to herbicides; occupational and public receptors. Occupational receptors include workers who mix, load, and apply herbicides. Public receptors would include the public likely to come into contact with herbicides such as ranchers, hunters, and other public land users.

3.11. Climate Change

According to the National Climate Assessment report produced by the U.S. Global Change Research Program, the watersheds are located in the Southwest region of the United States. The report states that recent warming has occurred in this region more rapidly than in other areas of the nation. Warmer temperatures are anticipated in this region in the future; projections for changes in amounts of precipitation are less certain. The warmer temperatures and drier conditions that are being observed in some areas of the Southwest are predicted to potentially alter the vegetative distribution across the region, including possible increases in invasive

species. The increased temperatures are also predicted to support increased wildfire activity (Garfin et al. 2014).

Chapter 4. Environmental Effects:

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4.1. Environmental Effects

This chapter identifies the known and predicted effects that are related to the actions defined in chapter 2 of this document. This chapter identifies the effects, both detrimental and beneficial, that may occur if an action is authorized. These effects may be ecological (such as the effects on natural resources and on the components, structures, and functioning of affected ecosystems), aesthetic, historic, cultural, economic, social, or health. To help decision-makers understand how a resource will be affected, this document identifies the effect and focuses on the context, intensity and duration of it.

4.2. Air Quality

4.2.1. Impacts from the Proposed Action

Use of the herbicides would not affect the overall air quality due to the application restrictions outlined in the proposed action. The Proposed Action would help to reduce the size of wildfires within the watersheds. This would prevent smoke pollution from large wildfires, and reduce future erosion of the overall watershed areas, by encouraging healthy vegetation growth of native plant species, which serves to stabilize soil, therefore reducing fugitive dust emissions and protecting air quality.

4.2.2. Impacts from the No Action Alternative

If no action is taken to curtail the potential for catastrophic wildfires, it is likely that future ignitions would result in fires similar to or worse than those that occurred in 2005 and 2006. Air quality would be impacted by more smoke from potential large fires, and possible increased soil erosion and fugitive dust emissions.

4.3. Vegetation

4.3.1. Impacts from the Proposed Action

The Proposed Action would prevent or limit the germination and establishment of targeted non-native annual grasses (red brome and cheat grass) within the fuel breaks. Creation of fuel breaks would reduce the size of future wildfires and allow for the native vegetation to recover throughout the watersheds.

The use of herbicides also has the potential to limit the germination and establishment of non-target annual and perennial plant species including cactus, yucca and Joshua trees and native annual forbs within the fuel breaks. In the long term, recurrent herbicide treatments could likely prevent or limit the natural replacement of shrubs.

4.3.2. Impacts from the No Action Alternative

Under the No Action Alternative no treatments would be implemented. In the short term, no direct impacts to vegetation would occur. In the long term, large scale wildfire would continue to burn large portions of the watersheds not allowing for the native vegetation to recover.

4.4. Watershed Condition

4.4.1. Impacts from the Proposed Action

The watersheds are primarily FRCC 3 (highly departed) resulting from a combination of drought, historic livestock grazing, and the 2005 and 2006 wildfires which resulted in a uncharacteristic vegetation classification of exotic vegetation (red brome). Although the Proposed Action is unlikely to reverse the highly departed condition of the watershed, the fuel breaks could prevent the remaining FRCC 1 and FRCC 2 areas from burning.

4.4.2. Impacts from the No Action Alternative

The watersheds are currently highly departed from reference BPS conditions and would remain that way without treatments. Without treatments, the FRCC 1 and FRCC 2 areas could convert to FRCC 3 through wildland fires.

4.5. Non-native Invasive and Noxious Species

4.5.1. Impacts from the Proposed Action

The Proposed Action would provide ongoing treatment and would reduce the targeted non-native annual grasses (red brome and cheat grass) within the fuel breaks. This in the long term would reduce the extent of wildfire, which in turn would reduce the spread potential of invasive non-native species following wildfire. The Proposed Action would reduce non-native plant species overall.

4.5.2. Impacts from the No Action Alternative

Direct impacts to weeds would not occur. Weed populations would continue to expand with the watersheds. Indirect impacts would include a less resilient native plant community that could be prone to weeds following a disturbance such as fire. Non-native invasive plants would continue to establish and dominate the fuel break areas.

4.6. Special Status Plant Species

4.6.1 Impacts from the Proposed Action

Implementation of the proposed action should not affect the Las Vegas Buckwheat because the existing and potential habitat for the Las Vegas Buckwheat is located outside of the proposed fuel breaks. Implementation of the proposed action could protect the buckwheat habitat from future wildfires.

4.6.2 Impacts from the No Action Alternative

Direct impacts to Las Vegas Buckwheat would not occur. However, by not creating the fuel breaks and protecting the Las Vegas Buckwheat from wildfire, it could be impacted from future wildfires.

4.7. Fish and Wildlife Resources

4.7.1. Fish and Wildlife

4.7.1.1 Impacts from the Proposed Action

Under the Proposed Action alternative, impacts to big game species should be negligible; Imazapic is of low toxicity to mammals. According to the manufacturer, Imazapic does not bioaccumulate in animals as it is rapidly excreted in urine and feces. Imazapic is therefore, essentially non-toxic to a wide range of non-target organisms, including mammals, birds, fish, aquatic invertebrates, and insects (Tu et al. 2001). Glyphosate is of relatively low toxicity to mammals.

Big game species may be temporarily displaced during project implementation to avoid vehicular and human activity. However, there would be no population-level impacts to big game species.

Also the long term impacts associated with the Proposed Action, such as a reduction in fine fuels, are beneficial to wildlife. The fuel breaks have the potential to reduce the size and intensity of wildfires in the area, thereby protecting habitat due to the Proposed Action.

The 17 Western States Herbicide EIS does not identify any risk to large mammals from acute or chronic exposure to herbicide via ingestion of food items contaminated with herbicide. Direct spray and indirect contact with vegetation after spraying were not analyzed for large mammals.

According to the 17 Western States Herbicide EIS, “A large mammal consuming contaminated vegetation would face low acute risk for scenarios involving the typical application rate,

moderate acute risk, for scenarios involving the maximum application rate, and low chronic risk for scenarios involving the maximum application rate.”

4.7.1.2 Impacts from the No Action Alternative

Under the No Action Alternative, there would be no direct harmful effects toward wildlife. However, with no fuel breaks there is potential for additional wildlife habitat to burn. As a result of fire disturbance and the slow desert plant community recovery following large fire events, habitat conversion from native species to non-native annual grasses is unlikely to support wildlife populations that are dependent upon native plants for food and shelter.

4.7.2. Migratory Birds and Raptors

4.7.2.1. Impacts from the Proposed Action

Under the Proposed Action, impacts to migratory birds and raptors would be minimal due to timing restrictions and design features. Treatment implementation would occur outside the breeding bird nesting season. Imazapic is of low toxicity to birds and Glyphosate is of relatively low toxicity to birds (USDI-BLM 2007). Indirectly, migratory birds may be impacted by the loss of habitat to utilize for foraging, breeding, and cover. However, areas proposed for treatment have previously burned, so it is not likely these areas currently provide intact native habitat for birds. The fuel breaks have the potential to reduce the size and intensity of wildfires in the area, thereby protecting habitat due to the proposed action.

4.7.2.2. Impacts from the No Action Alternative

The No Action Alternative would not incur direct or indirect effects to migratory birds and raptors. However, there is a higher potential for catastrophic wildfire to burn migratory bird and raptor habitat if fuel breaks were not installed.

4.7.3. Special Status Animal Species

4.7.3.1 Impacts from the Proposed Action

The Proposed Action Alternative should have minimal impact on the sensitive species found in this area. Negative impacts associated with displacement should be transitory in nature. There is potential for the loss of habitat used for foraging, breeding, and cover within the fuel breaks. Direct impacts from the herbicide are expected to be minimal because Imazapic is of low toxicity to birds and mammals and Glyphosate is of relatively low toxicity to mammals and birds.

4.7.3.2 Impacts from the No Action Alternative

There would be no immediate harmful effects toward BLM Sensitive Wildlife Species. However, there would be a potential for more wildlife habitat to burn if these fuel breaks were not installed.

4.7.4. Federally Endangered and Threatened Species

4.7.4.1. Impacts from the Proposed Action

Implementation of the proposed action would aid in the recovery of and/or protection of desert tortoise and their habitat by reducing the continuity of the annual exotic grasses and reducing the size of future wildfires throughout the watersheds.

Birds are typically identified as the appropriate surrogate for terrestrial reptiles in herbicide studies, due to a lack of toxicity data for reptiles (U.S. EPA/OPPTS 2004). Different data sources list differing levels of risk to birds from exposure to Imazapic and Glyphosate.

According to Table 4-24 of the Final Programmatic Environmental Impact Statement (PEIS) – Vegetation Treatments Using Herbicides on BLM Lands in 17 Western States (2007), ingestion of food items contaminated by direct spray from acute or chronic exposure to Imazapic in large and small birds was given a ranking of “no risk.” This means that the majority of Risk Quotients were less than the most conservative Levels of Concern for special status species. The EIS characterized the terrestrial herbicide Imazapic as “no risks to special status species were predicted via any exposure pathway.” Glyphosate was predicted to pose low to no risk to birds in the aforementioned EIS.

Direct effects could result in injury and harm of individual tortoises given certain exposure scenarios should a tortoise be above ground during implementation. Birds were considered to be at risk from exposure to Imazapic as a result of direct spraying, indirect contact with foliage after direct spraying, and ingestion of food items that had been direct sprayed; however, long-term exposure to Imazapic resulted in reduced growth in large and small birds (U.S. EPA/OPPTS 2004). Similar effects to desert tortoise could be expected. Glyphosate exposure differed from Imazapic. Large birds that consumed vegetation contaminated with glyphosate were at low risk. At typical application rates, acute risk from exposure to glyphosate was low, and no risk was documented from chronic exposure. If offsite drift of herbicides occurs, exposure risks to tortoise would be the same as described above. Direct spraying of tortoise may occur during implementation. Incidental exposure from contact with sprayed plants poses no to low risk depending on which herbicide is utilized. Because there will be no long-term exposure to herbicides during this project, risk to tortoises will be none to low depending on which herbicide is utilized.

Herbicide exposure to tortoise may occur from ingestion of contaminated vegetation. Based on exposure risk described above, there is no mortality risk from Imazapic. Mortality from glyphosate is unlikely because of the expected low acute risk to tortoises. Mortality from

chronic risk is also unlikely because glyphosate has low residency time in the environment (USFWS 2012b).

This project would affect up to 1,807 acres of desert tortoise habitat. There is potential for tortoises to wander into the project area. If not noticed and avoided, desert tortoises could be either injured or killed (by crushing) or harassed (by being moved out of harm's way) by vehicle activities associated with the project. Consultation under section 7 of the Endangered Species Act has been initiated for the Proposed Action. Desert tortoise minimization and avoidance measures in the section 7 consultation would reduce potential impacts to desert tortoise.

Indirect effects could occur to non-target plant species because the herbicides to be used are non-selective. Non-target plants may include native annual forbs and grasses, which along with non-native grasses, are consumed by tortoise. Studies suggest Imazapic has little effect on perennial grasses but may affect annual grasses and suppress growth of annual forbs. Although a temporary reduction to tortoise food resources may occur, the initial response of native species tends to be followed in subsequent years by a resurgence of the native vegetation (USFWS 2012b).

While there may be short-term and localized effects that reduce available food sources for desert tortoise, the proposed treatments are anticipated to provide available forage and cover habitat in the long-term for the tortoise. Fire has been identified as a primary threat to tortoise and their habitat in the Mojave Desert, and a need to control wildfires and reduce the grass-fire cycles is recognized in the Revised Recovery Plan for Desert Tortoise (USFWS 2011).

4.7.4.2. Impacts from the No Action Alternative

Under the No Action Alternative, immediate harmful impacts toward desert tortoise would not occur. However, there is potential for more tortoise habitat to burn if fuel breaks were not installed. Fire in a Mojave Desert plant community reduces the availability of native shrubs for desert tortoise habitat and forage, replacing shrubs with low utility annual non-native grasses (Brooks and Esque 2002).

4.8. Wilderness and Lands with Wilderness Characteristics

4.8.1. Impacts from the Proposed Action

There would be no direct effect of the proposed action to wilderness because the fuels breaks would not occur in these areas. Establishing fuel breaks outside of wilderness would help protect the native Mojave vegetation from the impacts of catastrophic wildfire and increase the potential of exotic annual grasses within wilderness.

Approximately 7.5 miles of fuel break would occur within the Lands with Wilderness Characteristics unit. This could impact the naturalness of the units by developing human caused disturbance on the landscape. However, this effect would be minimal because the fuel break would be created next to

an existing road and the entire area was previously burned during the 2005 wildfires. Establishing the fuel break within this area would help reduce the size of any future wildfires and allow for the native vegetation to recover, and protect the wilderness from being burned.

4.8.2. Impacts from the No Action Alternative

As catastrophic wildfire, in conjunction with annual grasses, has altered the landscape in the Mojave Desert, the fire return interval has become extremely frequent. This is not the natural condition within the Wilderness areas or lands with wilderness characteristics. Under the no action alternative, this pattern is likely to continue and the likelihood of further impacting native vegetation within wilderness. Consequently, the potential for harming the natural character would be present under this alternative.

4.9. Fire and Fuels Management

4.9.1. Fuels

4.9.1.1. Impacts from the Proposed Action

The implementation of the proposed action should decrease the connectivity of fine fuels in the watersheds. By reducing this connectivity, the potential for catastrophic wildfires is reduced and the probability of large scale fires (such as those that occurred in 2005 and 2006) would be reduced. The continued spread of annual grasses which produce fine fuels should be decreased. Fire size and intensity would be reduced by providing effective barriers to slow or stop large wildfires and provide anchor points and safety zones for suppression resources. Changes in fire regimes and conditions classes should stabilize as remaining native vegetation would be protected over time.

A study by BASF and Synergy Resource Solutions Inc. indicates that fire intensity can be significantly reduced in cheatgrass-infested areas treated by Imazapic (Kury et al. 2002). The study found flame height in treated areas can be reduced by 68 to 88 percent and fire spread can be minimized by 78 to 95 percent, allowing for control with hand tools. Similar results would be expected with other appropriate herbicides.

4.9.1.2. Impacts from the No Action Alternative

Under the No Action Alternative, fuels management and vegetation treatments would continue as currently directed within the RMP and FMP. Treatments within the area would continue to be planned and prioritized as they are currently.

4.9.2. Fire Management

4.9.2.1. Impacts from the Proposed Action

Implementation of fuel breaks would reduce the continuity of the fuels. This should lead to a reduction in the risk for large wildfires within the watersheds. There would be no effect to the watersheds by not allowing wildland fire for resource benefit to occur because the area burned during the 2005 fires would be allowed to recover.

4.9.2.2. Impacts from the No Action Alternative

Under the No Action Alternative fire management would continue as currently directed within the RMP and FMP. Fuel breaks would not be implemented within the watershed. Continued potential for large scale catastrophic wildfires could occur such as those that occurred in 2005.

4.10. Human Health and Safety

4.10.1. Impacts from the Proposed Action

The proposed action would increase public and firefighter safety by reducing the threat of large wildfires and reducing effects from smoke on downwind receptors.

Potential impacts of the proposed action on human health would be minimal as all SOPs and label instructions would be followed. The use of the two herbicides is considered safe by the U.S. Environmental Protection Agency and both are approved for use in the 2007 *Final Vegetation Treatments Using Herbicides on BLM lands in 17 Western States Programmatic Environmental Impact Statement and Record of Decision*.

4.10.2. Impacts from the No Action Alternative

Impacts to human health and safety would remain the same.

4.11. Climate Change

4.11.1. Impacts from the Proposed Action

The fuel breaks may serve to counteract some of the potential increases in wildfire risk if, in fact, overall warming occurs within the project area as predicted. Exact quantification of any of these impacts relative to the overall warming trend in the region is not possible due to the lack of site-specific research and general controversy surrounding the topic of climate change however, the scale and lengthy timeframe of expected implementation ensures that effects resulting from this project are well under established thresholds.

4.11.2. Impacts from the No Action Alternative

The No Action Alternative does not include any vegetation treatments and would not potentially counteract any of the trends predicted to support increased risk of wildfires. However, exact quantification of any of these impacts relative to the overall warming trend in the region is not possible due to the lack of site-specific research and general controversy surrounding the topic of climate change.

4.12. Cumulative Effects

As defined by the Council on Environmental Quality (CEQ) Regulations for Implementing NEPA, Cumulative Effects (40 CFR 1508.7) are defined as, “The impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.”

The general area reviewed as the Cumulative Effects Study Area (CESA) includes: the entirety of Toquop Wash and Tule Desert Watersheds. In addition to the site specific analysis included below, a comprehensive cumulative effects analysis can be found in Section 4.28 of the Ely Proposed Resource Management Plan/Final Environmental Impact Statement (November 2007).

4.12.1. Past, Present, and Reasonably Foreseeable Future Actions

4.12.1.1. Past Actions

Past actions in the area include grazing, mining, recreation, hunting, fuels treatments (emergency fire stabilization and rehabilitation), range improvement projects, development subject to rights-of-way and wildfire.

4.12.1.2. Present Actions

Present actions include wildfire management, mining, recreation, grazing development subject to rights-of-way, and hunting.

4.12.1.3. Reasonably Foreseeable Future Actions (RFFAs)

Reasonably foreseeable future actions include hunting, recreation, grazing, development subject to rights-of-way, travel management, and wildfire management. There are several development projects that are proposed for this area, a fiber optic line from Lyman Crossing to the Lincoln County Water Development pipeline, a water pipeline from the Clover Mountains to Toquop Energy, development of the Toquop Energy gas-fired energy plant, and potentially the

TransWest Express and Zephyr transmission lines that may come down through the center of the area. Watershed Restoration Plans are currently being developed for the areas surrounding the Toquop Wash and Tule Desert Watersheds, surrounding watersheds, including Clover Creek South, Delamar Valley, Kane Spring Wash, Meadow Valley Wash North, Beaver Dam, Meadow Valley Wash South and Sand Hollow Wash Watersheds. Each of the efforts is at various stages in the process, but all could incorporate vegetation and other treatments targeted to improve the health of the landscape. The continuation of the proposed fuel breaks could occur into surrounding watersheds and other adjacent BLM jurisdictions. In conjunction with the development of the Toquop Energy gas-fired energy plant, the proponent will drill a series of water wells.

4.12.2. Cumulative Effects Summary

4.12.2.1. Vegetation

Under many situations, uncontrolled wildfires affect continuous expanses of vegetation and habitat, leaving minimal mosaic to the burn pattern. Rehabilitation efforts are generally expensive and difficult due to the lack of species diversity in many plant communities that have burned and the length of time it takes in these environments to recover. Long term changes in ecological conditions affect vegetative diversity and habitat quality. Past actions to adjust livestock and wildlife use on vegetation combined with present and future actions to implement fuels breaks would allow for an improvement in vegetative recruitment, establishment, production, vigor and diversity and help facilitate the establishment of the natural (historic) fire regime and improve habitat conditions for many species of wildlife.

4.12.2.2. Nonnative Invasive and Noxious Species

The primary cumulative impact to the watershed would occur if exotic annual grasses increased the fire frequency and these areas converted to an exotic annual grass monoculture. The design features of the Proposed Action should reduce the size of wildfires and prevent annual monocultures from establishing in new areas or expanding from present locations.

4.12.2.3. Wildlife Resources, including Migratory Birds and Special Status Species

Activities such as livestock grazing, road construction and maintenance, fence construction, uncontrolled wildfire, and recreation activities including off-highway travel, camping and hunting have potentially altered wildlife habitat or affected wildlife behavior and distribution. Most of these activities are expected to continue to some degree in the future and would continue to impact wildlife in a similar fashion. Application of BLM policy and guidance on raptors, migratory birds, and special status species would help to reduce overall impacts to these species.

4.12.2.4. Fuels and Fire Management

Past and present actions have been relatively small in size and, while beneficial in accomplishing the objective for the specific treatment; they are not substantial enough to contribute to a reduction in the departure within the overall watershed. Future actions within the watershed

include the continuation of land management as prescribed under the current RMP and continuation of the fuels breaks. Fire management would continue to occur as dictated by the current Fire Management Plan (USDI–BLM, 2004) and RMP.

4.12.2.5. Lands with Wilderness Characteristics

All human actions have the potential to impact the naturalness of the area, whether in the short term (most wildlife management actions) or the long term (mining). The size of the identified LWC could be impacted if any actions result in the creation of roads within the unit. The proposed action adds only minor impacts to the cumulative effects of other past, present and RFFAs.

Chapter 5. Tribes, Individuals, Organizations, or Agencies Consulted:

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Tribes, Individuals, Organizations, or Agencies Consulted:

Members of the Public at large

Eastern Nevada Landscape Coalition

Native American Tribes that have expressed interest in the area

Nevada Department of Wildlife

U.S. Fish and Wildlife Service

State Historic Preservation Office

5.1. Tribal Coordination

On February 15, 2012 the Toquop Wash and Tule Desert Watershed Restoration proposal was presented via letter to the tribes that have expressed interest in the area as a means of Tribal coordination. The tribes were specifically asked to help develop alternatives for analysis in this NEPA action. Additionally, the Ely District Office Tribal Coordinator, Elvis Wall, contacted the tribes that have previously expressed interest in activities in the area and informed them of the forthcoming letter and of the BLM's desire that the tribes participate. No concerns or alternatives were identified as a result of this letter.

5.1.1. Request for input from Interested Publics

On December 16th, 2011 a "Consultation, Cooperation, and Coordination" (CCC) letter was mailed to those parties that had previously expressed interest in the watershed assessment process. In this letter, individuals were notified of the BLM's intent to analyze the Toquop Wash and Tule Desert watersheds for health and vigor and to propose corrective measures should they be needed. Those individuals that expressed continued interest were added to the project specific mailing list and will be afforded the opportunity for comment and input on the proposal.

Chapter 6. List of Preparers

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Table 6.1. List of Preparers

Name	Title	Responsible for the Following Section(s) of this Document
Kyle Hansen	Watershed Coordinator	General Information/Project Lead
Travis Young	Planning and Environmental Coordinator	NEPA Compliance, Environmental Justice
Cody Coombs	Supervisory Natural Resource Specialist	Fuels and Fire Management
Kyle Teel	Fire Ecologist	Fuels and Fire Management
Adam Johnson	Forester	Forest and Woodland Vegetation, Vegetative Products
Andy Daniels	Wildlife Biologist	Wildlife, Migratory Birds, Threatened and Endangered, Special Status Species
Alicia Styles	Wildlife Biologist	Wildlife, Migratory Birds, Threatened and Endangered, Special Status Species
Todd Trapp	Wildlife Biologist	Wildlife, Migratory Birds, Threatened and Endangered, Special Status Species
Mark D'Aversa	Hydrologist	Air Quality, Soil, Water Resources, Water Quality, Floodplains, Wetlands/Riparian Areas, Farmlands
Nicholas Pay	Archaeologist; Planning and Environmental Coordinator	Cultural/Paleontological/Historical Res.
Harry Konwin	Archaeologist	Cultural/Paleontological/Historical Res.
Melanie Peterson	Environmental Protection Specialist	Hazardous Materials, Human Health and Safety
Ben Noyes	Wild Horse and Burro Specialist	Wild Horse and Burros
Cameron Boyce	Natural Resource Specialist	Non-native Invasive and Noxious Species
Emily Simpson	Planning and Environmental Coordinator (Wilderness)	Wilderness, Special Designations, Visual Resources, Land with Wilderness Characteristics
Carissa Schilling	Geologist	Mineral Resources
Elvis Wall	Native American Coordinator	Native American Coordination
Ty Chamberlain	Realty Specialist	Lands and Realty
Domenic Bolognani	Rangeland Management Specialist	Livestock Grazing, Rangeland Vegetation
Daniel Condie	Rangeland Management Specialist	Livestock Grazing, Rangeland Vegetation
John Miller	Park Ranger (Wilderness)	Recreation
Elizabeth Domina	Outdoor Recreation Planner	Recreation, Visual Resource Management
Alan Kunze	Geologist	Mineral Resources

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